What is Claimed is:

1. A packet transmission system comprising:

a transmitting device for incorporating a sequence field containing a pseudo-random value in data packets; and

a receiving device for checking said pseudo-random value in said sequence field of said data packets, thereby permitting said receiving device to determine whether said data was sent by said transmitting device and whether the correct sequence of said data packets was maintained.

2. The system of claim1 in which said transmitting device further comprises:

a transform function operating on said data using states; and

means to include said states of said transform function as said pseudo-random value in the said sequence field of said packet to be transmitted over said transmission medium.

3. The system of claim 2 in which said receiving device further comprises:

a second transform function using states; and

means to compare said states of said transform function contained in said sequence field of said packet received over said transmission medium with result of said second one-way hash function when used to encode said states of said second transform function, thereby permitting said receiving device to be assured that said packet was sent by said transmitting device.

4. The system of claim 3 in which said transmitting device further includes a one-way hash function to encode said states of said transform function

5. The system of claim 4 in which said receiving device further includes a second one-way hash function to encode said states of said second transform function

6. The system of claim 5 wherein said transform function and said second transform function are identical, thereby ensuring simpler matching of said states.

7. The system of claim 6 wherein said one-way hash function and said second one-way hash function are identical, thereby ensuring simpler matching of said states.

8. The system of claim 7 wherein the length of said included said states is varied to match the system needs, thereby allowing some savings in message overhead where said length is less than that assigned in existing protocols.

9. The system of claim 8 wherein said transform and said second transform are any algorithm using states in their implementation.

10. The system of claim 8 wherein said transform and said second transform are encryption algorithms.

11. The system of claim 8 wherein said transform and said second transform are compression algorithms.

12. The system of claim 10 wherein said state values are used to confirm synchronisation of encryption keys.

13. The system of claim 10 wherein said state values are further used to confirm other aspects of the operation of said encryption algorithms.